

## ACTIVITIES REPORT FOR THE QUARTER ENDED 31 DECEMBER 2017

### QUARTER HIGHLIGHTS:

#### West Musgrave Project

- **OZ Minerals proceeding to next stage of Earn-in Agreement (OZ Minerals can earn 51 per cent of the Project by spending \$19 million within 18 months)**
- **Further Scoping Study shows investable base case for Nebo-Babel with upside potential through resource conversion**
- **OZ Minerals to manage Pre-Feasibility Study (PFS),**
- **PFS to focus on improving metallurgical recoveries, lower cost non-process infrastructure and resource conversion**
- **Exploration program to focus on regional potential including One Tree Hill prospect and Succoth copper deposit.**

Cassini Resources Limited (ASX:CZI) ("Cassini" or the "Company") is pleased to report on the significant milestones achieved at its development and exploration projects during the December 2017 Quarter.

#### Corporate Update

On November 14 2017, Cassini and its partner OZ Minerals Ltd ("OZ Minerals") jointly announced the successful completion of the West Musgrave Project Further Scoping Study (FSS) and the commencement of a Pre-Feasibility Study into the development of the Nebo Babel Deposits as well as exploration work in the broader project area.

The next stage of funding requires OZ Minerals to fund \$19M on development and exploration within an 18 month period in order to earn 51% of the Project. In order to streamline this next phase Cassini has elected for OZ Minerals to manage the PFS. As part of this agreement, Cassini was paid \$1.9 million at the commencement of the PFS. Cassini will continue to manage on-ground activities associated with the PFS and the regional exploration program.

On the announcement of the FSS results, Cassini Managing Director, Mr Richard Bevan, said: "The Scoping Study advances the development of the Nebo-Babel deposits. The increased scale of the project has opened up a range of possibilities beyond what we had originally contemplated, with potential for further upside to be realised in the upcoming PFS. We have an initial 8 years of mine life with clear view on increasing this to beyond 15 years. The exploration program will expand our understanding of the mineralisation at One Tree Hill and the Succoth copper deposit, as we pursue our goal of establishing a multi-decade mining operation. We look forward to our continuing relationship with OZ Minerals and to delivering sustainable value to all our shareholders through the development of the Project."

## West Musgrave Project (CZI 100%, OZL earning up to 70%)

### Further Scoping Study Summary

**Table 1: Financial and Production Metrics**

Key Financial and Production Metrics	
Processing capacity	10+ Mtpa
Initial Mine life	8 years
Average Nickel Metal production <sup>1</sup>	20-25ktpa
Average Copper Metal production <sup>1</sup>	25-30ktpa
Average Cobalt Metal production <sup>1</sup>	700-1,000tpa
Nickel equivalent grade <sup>2</sup>	0.5-0.6%
Copper equivalent grade <sup>2</sup>	1.0-1.2%
Nickel grade	0.3-0.4%
Copper grade	0.35-0.45%
C1 cost payable Ni main <sup>3</sup>	200-230US\$/lb
All-in sustaining cost Ni main	290-330US\$/lb
C1 cost payable Cu main <sup>3</sup>	20-40US\$/lb
All-in sustaining cost Cu main	60-90US\$/lb
Pre-production capital <sup>4</sup>	\$730-800m

	Post-tax	Pre-tax
Average net cash flow (Years 1-8)	\$120-150m	\$150-200m
Internal Rate of Return <sup>5</sup>	20-25%	25-30%
Project Payback	3-4yrs	2-3yrs

Ranges are representative of sensitivities and potential improvement opportunities for resource conversion, metallurgical recoveries, power and pre-production capital. Excludes OZ Minerals earn-in/study costs.

1. Average metal production is calculated over the initial mine life of eight years
2. Nickel equivalent grade =  $Ni\% + Cu\% \times 0.56$ . Copper equivalent grade =  $Cu\% + Ni\% \times 1.97$ . Based on assumed recoveries of 73% for Cu and 59% for Ni and commodity prices shown below. It is the Cassini's opinion that all the elements included in the metal equivalents calculation have a reasonable potential to be recovered and sold.
3. Financial valuation has used long term consensus forecasts of Ni: US\$7.13/lb, Cu: US\$2.95/lb, Co: US\$14.20/lb, Au: US\$1,292/oz, Pt: US\$1,128/oz, Pd: US\$769/oz and AUD:USD of \$0.74.
4. Pre-production capital includes capitalised pre-strip of up to \$175m, although it is expected that approximately 50% of this cost will be incurred during the first year of production.
5. The production targets referred to in this announcement are based on the first 8 years of production which includes 74% Indicated Mineral Resources and 26% Inferred Mineral Resources. The Inferred Resources do not determine the economic viability of the project as approximately 80% of resources within the optimisation pit shells are in the Indicated Category during the pay-back period. There is a low level of geological confidence associated with Inferred Mineral Resources and there is no certainty that further exploration work will result in the determination of Indicated Mineral Resources or that the production targets themselves will be realised.

## FSS OVERVIEW

Cassini Resources has been the operator for the Study on the Nebo-Babel Deposits since execution of the Earn-in/Joint Venture Agreement with OZ Minerals in October 2016. The intent of the Study was to build on Cassini's 2015 Scoping Study of circa 1.5Mtpa with a view to understanding the scale of the operation whilst also de-risking key technical aspects such as metallurgy and non-process infrastructure costs.

A key outcome of the Study was to confirm and increase the confidence in metallurgical performance of the full range of mineralisation types within the Nebo-Babel deposits. These results have been used to update previous mining and processing studies in order to determine the optimal annual throughput for of the operation. In addition, all capital and operating costs were reviewed and updated for inclusion in the current Study. A number of "upside" opportunities have also been identified to be evaluated during the next study stage.

The Study evaluated several development scenarios ranging from 6 to 12Mtpa throughput. The Study demonstrated the economic viability of the Project at all the throughput scenarios with strong annual nickel and copper production and low operating costs. It was determined that the 10Mtpa scenario presented the most financial potential (Table 1).

The low operating costs are driven by low mining costs due to a gently dipping orebody conducive to large-scale open pit mining as well as significant by-product credits. International resources consultancy, Wood Mackenzie Limited (Wood Mackenzie) estimates the Nebo-Babel deposits to be in the lower third of C1 operating costs for nickel projects and bottom quartile for copper projects against global peers.

The Project is strongly leveraged to fluctuations in the AUD:USD exchange rate as well as to the nickel price and nickel recovery.



**Figure 1:** Location of the West Musgrave Project

## Operating Metrics

Mining operations have an initial mine life of eight years with several opportunities to add significant mine life through upgrading of Inferred Resources to Indicated Resources, progressing the Succoth mineral resource and the potential for the advancement of other existing regional exploration targets.

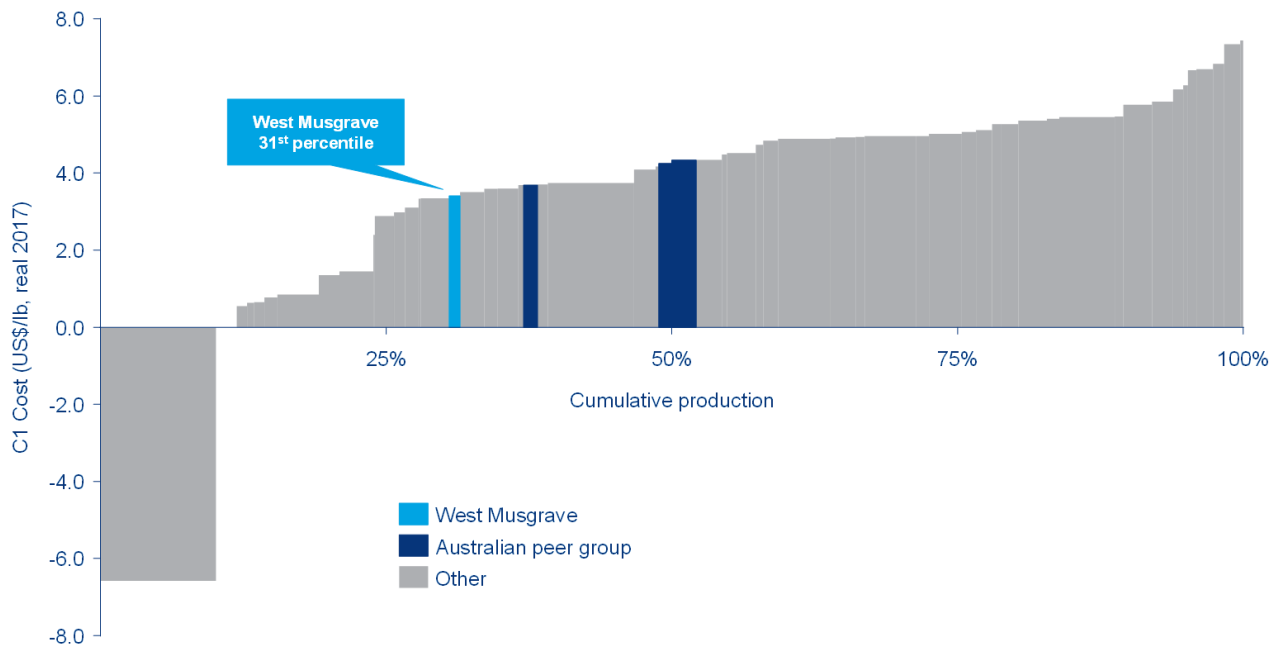
Average annual production is estimated to be 20-25Kt of nickel in concentrate and 25-30Kt of copper in concentrate during the first eight years.

Importantly, in the first three years, the average annual production is estimated to be 25-30Kt nickel and 35-40Kt copper in concentrate, respectively. This supports an estimated payback of the capital expenditure on the Project in less than four years (post-tax).

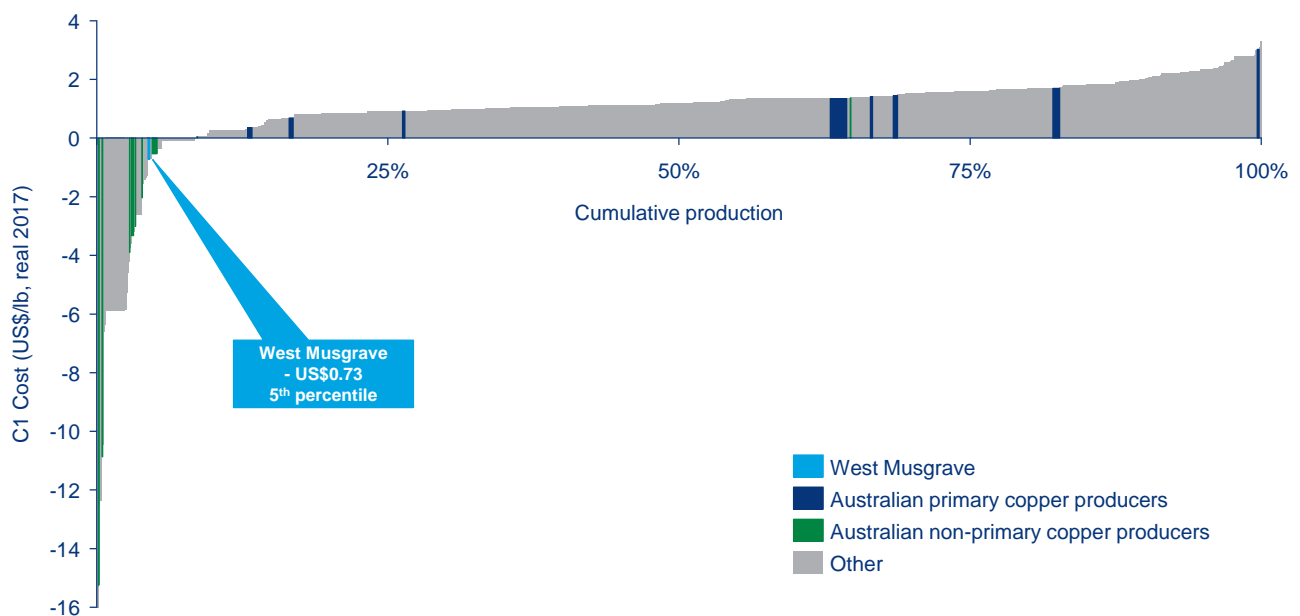
Cash costs are forecast to be at the lowest end of the range of Australian nickel and copper producers. This represents a significant strategic advantage. The estimated C1 cash operating cost (after by-product credits) is forecast to average US\$2.00–2.30/lb payable nickel (US\$1.30-1.60/lb nickel in concentrate), or an average US\$0.20–0.40/lb payable copper. Table 2 provides key operating cost estimates. Ranges are representative of sensitivities and potential improvement opportunities for metallurgical recoveries, power and pre-production capital.

**Table 2: Estimate of C1 cash operating costs (after by-product credits)**

Average Operating Cost Estimates	10Mtpa Case (US\$/lb Ni) Payable Nickel	10Mtpa Case (US\$/lb Ni) Nickel Metal In Concentrate	10Mtpa Case (US\$/lb Cu) Payable copper
Mining	1.50 – 1.75	1.00 – 1.25	0.45 – 0.90
Processing	2.40 – 2.80	1.60 – 2.00	0.75 - 1.50
Power	1.50 – 1.70	1.00 – 1.25	0.45 - 0.90
Transport	1.30 – 1.50	0.85 – 1.05	0.40 – 0.80
Fees & Charges	0.50 – 0.55	0.35 – 0.40	0.15 – 0.30
By-product Credits	(5.20 – 6.00)	(3.50 – 4.35)	(2.00 – 4.00)
<b>Total C1 Cash Cost</b>	<b>\$2.00 - 2.30</b>	<b>\$1.30 – 1.60</b>	<b>\$0.20 – 0.40</b>



**Figure 2:** Global nickel C1 cost curves (Note: West Musgrave costs and production are the life-of-mine average. Cassini's costs for West Musgrave have been aligned with Wood Mackenzie's assumptions related to prices for by-products, and Wood Mackenzie's definition and methodology of C1 costs. The cost estimates are on a paid nickel basis. Source: Cost curve from Wood Mackenzie data, West Musgrave Project costs provided by Cassini Resources Limited)



**Figure 3:** Global copper C1 cost curves (Note: West Musgrave costs and production are the life-of-mine average. Primary copper producers are those that receive more than 65% of net revenue from copper sales on average. Cassini's costs for West Musgrave have been aligned with Wood Mackenzie's assumptions related to prices for by-products, and Wood Mackenzie's definition and methodology of C1 costs. The cost estimates are on a paid copper basis. Source: Cost curve from Wood Mackenzie data, West Musgrave Project costs provided by Cassini Resources Limited)

Pre-production capital cost for the West Musgrave Project is in the range of \$730-\$800M, which includes capitalised pre-strip of \$160-175M. This represents the cost of developing the Project through to 2022 excluding OZ Minerals earn-in/study costs. The breakdown of estimated pre-production capital is provided in Table 3 below. The West Musgrave Project is a low capital intensity nickel-copper project with capital intensity of around US\$7,800/CuEq tonne.

**Table 3: Pre-production capital costs**

Capital cost estimate	(AUD\$ million)
Mining pre-strip	160 – 175
Process Plant	350 – 370
Site Infrastructure	45 – 55
Tailings Storage Facility	20 – 25
Water supply	55 – 60
Road upgrades	5 – 10
Owners costs	45 – 50
Contingency	50 – 55
<b>Total</b>	<b>730 – 800</b>

### Mineral Resource Estimate

The Nebo-Babel Mineral Resource estimate was updated during the Study with additional drill holes completed during 2017 and more detailed information on the weathering and transition zones. The geological interpretation at Nebo was modified slightly while Babel remained unchanged from the resource estimate released in Cassini's ASX announcement dated 25 February 2015. The estimate was completed by independent resource consultancy, Golder Associates Pty Ltd (Golder Associates).

Economic analysis in the Study has shown that an appropriate nickel cut-off grade for the Project is in the range of 0.20-0.30% nickel. As such, Cassini Resources has set the Mineral Resource Estimate at a 0.25% nickel cut-off, which is summarised below.

Class	Deposit	Tonnes (Mt)	Ni (%)	Cu (%)	Co (ppm)	Contained Ni metal (t)	Contained Cu metal (t)
<b>Indicated</b>	Babel	73.9	0.36	0.41	132	270,000	305,000
	Nebo	37.8	0.49	0.44	211	185,000	165,000
	<b>Sub-total</b>	<b>111.6</b>	<b>0.41</b>	<b>0.42</b>	<b>158</b>	<b>455,000</b>	<b>470,000</b>
<b>Inferred</b>	Babel	169.4	0.33	0.37	123	560,000	630,000
	Nebo	1.9	0.37	0.34	149	5,000	5,000
	<b>Sub-total</b>	<b>171.3</b>	<b>0.33</b>	<b>0.37</b>	<b>124</b>	<b>565,000</b>	<b>635,000</b>
<b>Total</b>		<b>283.0</b>	<b>0.36</b>	<b>0.39</b>	<b>137</b>	<b>1,020,000</b>	<b>1,105,000</b>



## Metallurgy

Test work in Cassini's 2015 Scoping Study was focused on the relatively high head grade ore domains, which would be processed through a 1.5Mtpa treatment plant. The scope of the recent testwork program was designed to cover whole ore composites and variability samples which are representative of the ore domains and average head grades which align more with the proposed increase in project throughput options.

This current program has increased the level of understanding and confidence in the metallurgical performances across a complete range of mineralisation types within the Nebo-Babel deposits. The testwork focused on lower head grade samples across the primary and weathered ore domains, some of which were not previously tested. No oxide material is being considered for treatment. A significant component of the testwork included optimisation of the process flow sheet, and testing of alternative reagent regimes, all of which were aimed at further improving nickel and copper recoveries and concentrate grades.

Testwork was conducted at Bureau Veritas Laboratories in Perth under the supervision of GR Engineering Services. The testwork comprised 200 flotation tests and covered 17 variability composites (different mineralised domains covering a range of nickel and copper grades). A parallel program of independent umpire test work has been completed by ALS Metallurgy in Perth. This program successfully reproduced the initial results.

Two locked cycle tests on master composites, each representing typical run of mine material, of the early and later years of a likely mine schedule, have also been tested. Locked cycle tests are used to simulate continuous flotation circuit conditions, such as those in an actual process plant, during which various streams are recycled until the test achieves stability.

The program has successfully produced separate, saleable nickel and copper concentrates from all mineralised domains including the weathered ore-domains (transition zone and pyrite-violarite zones, but not oxide). Importantly both concentrates have no penalty elements such as arsenic and have high Fe:MgO ( $\geq 10$ ), both of which are desired by smelters. Results of the final cycle for the two master composites are shown in Table 5.

Results of the metallurgy program have been combined with the new resource model to generate a metallurgy model so that each resource block has an associated recovery factor to provide more effective mining optimisation.

**Table 5: Locked cycle test results**

Mineralisation Type	Nickel Concentrate		Copper Concentrate	
	Recovery (%)	Grade (%)	Recovery (%)	Grade (%)
Master Composite A	45	10	78	21
Master Composite B	70	10	78	25

Master Composite A comprises 10% Nebo primary massive and breccia mineralisation, 30% Nebo weathered massive and breccia mineralisation and 60% Babel weathered disseminated mineralisation. This composite approximates one of the potential processing streams during the first 2 years of operation.

**Note:** Master Composite A includes 90% of the shallow weathered mineralisation which would be mined first. With only 10% primary ore, it is likely to represent a worst-case processing scenario. An objective of future study phases is to find the optimum blend of the weathered and primary ore before the operation returns to steady-state production on 100% primary ore in later years.

Master Composite B comprises 50% Nebo primary massive and breccia mineralisation, 48% Babel primary disseminated mineralisation and 2% Babel disseminated transition zone. This master composite approximates potential processing streams in the later years of operation.

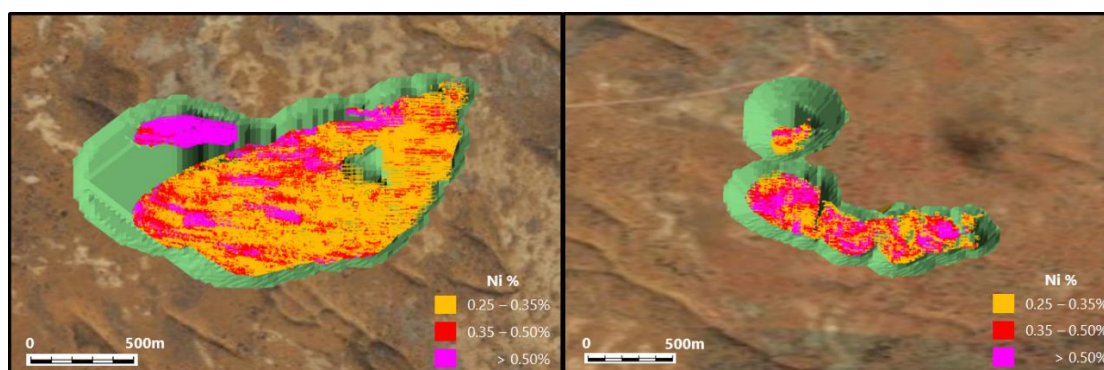
**Note:** Based on the results of Master Composite B, Cassini could reasonably target a final nickel concentrate grade of **10-12%** with recoveries in the range of **55-70%**.

### Mining and Scheduling

The Mining Study was done by independent consultancy, Mining Plus Pty Ltd (Mining Plus). Mining optimisation was done using Whittle software for each deposit separately before being scheduled manually. It is proposed to mine the Nebo deposit first followed by Babel, with a total mineable resource of circa 150Mt at a nickel grade 0.35% and copper grade of 0.40% demonstrated in figure 4.

The first eight years of mine life include 74% Indicated Mineral Resources including 80% during the pay-back period and therefore Inferred Resources do not underpin the economic viability of the Project. Pre-strip waste removal contributes up to \$175M to pre-production capital, although up to \$95M is expected to be incurred during the first year of production.

A feature of the pit optimisation is a very low stripping ratio of 3.2:1 due to relatively flat deposit geometry and thick mineralised zones. Mining is by conventional drill & blast, load and haul, utilising an appropriately sized earthmoving fleet operated by contractors on behalf of Cassini.



**Figure 4:** Optimised pit shells for Babel (left) and Nebo (right) showing nickel ore blocks

### Ore Processing

An ore processing plant will be built on-site and will comprise conventional crushing, milling and classification circuits followed by two stages of conventional flotation with cleaning and re-cleaning to produce separate nickel and copper concentrates.

The Project is expected to produce significant amounts of nickel and copper with the 10Mtpa case expected to deliver 20-25Kt of nickel in concentrate and 25-30Kt of copper in concentrate per annum over the first eight years.

Due to the high-grade mineralisation being at the top of the deposits, the first three years of operation may produce significantly greater quantities of nickel and copper of 25-30Kt and 35-40Kt in concentrate respectively, assisting rapid payback of capital. Further optimisation of concentrate production over LOM will be undertaken in the PFS stage.



## Water Supply

Independent consultants, CDM Smith, completed a review of water supply options for the Project. The study included a detailed desktop assessment of all potential groundwater sources and incorporated the results from three groundwater exploration holes that were drilled in April 2017 to test palaeochannel aquifers approximately 20km from Nebo-Babel. Water supply infrastructure concepts for multiple water demand scenarios and different groundwater sources were also developed and evaluated.

The groundwater exploration drilling has demonstrated that “on-project” palaeochannels can potentially support up to 7GL/yr, sufficient to supply the 10Mtpa processing plant. Additional palaeochannels have been identified and secured through recent tenement applications with a view to providing additional water resources.

This is a significant advancement and provides a more cost-effective water supply solution with lower risks to tenure and access than the previous Scoping Study.

## Power Supply

WSP were engaged to undertake a study of power generation options for the Project. Energy source options considered for conventional generation comprised diesel, gas and LNG. Renewable energy sources considered comprised wind, solar and a number of hybrid options using wind, solar, battery and diesel backup options.

A 60MW power plant has been proposed for the 10Mtpa case utilising a combined solar-diesel hybrid solution. Operating costs were benchmarked against recent large solar installations and also included a detailed assessment of fuel transport costs.

Renewable energy options included a more detailed assessment of the Project area in order to identify areas that may provide improved wind resource for potentially siting a large wind farm to support a solar-wind-diesel-battery power plant with even greater savings. Two new sites have been identified within the project with a theoretical 35% greater wind energy compared to the site that was previously contemplated. Wind masts are planned to be erected early in the PFS to collect base line data and confirm wind energy estimates.

In addition to updating diesel power generation assumptions, the Study included high-level assessment of gas power generation, a first for the Project. Gas power is generally a very cost-effective power solution for projects with long mine life, which is required to offset high gas pipeline capital costs. A 10Mtpa operation may justify the installation of a gas pipeline which will be investigated at a later stage in the Project.

## Transport Logistics

Qube Bulk Pty Ltd (Qube) were engaged to undertake a Transport Logistics Study. A lower diesel price assumption and lower rail and port charges have resulted in significantly lower concentrate transport costs compared to those used in the 2015 Scoping Study.

The FSS has confirmed that the previous transport option of exporting concentrates through Esperance is still the preferred route. This option includes road transport along the Great Central Road to a central hub at Leonora, followed by rail transport to Esperance. Other road transport routes to Geraldton or east-bound to the Darwin-Adelaide Railway remain potentially viable alternatives.

Qube has also provided transport costs for inbound mine consumables and evaluated back-loading options, which has helped to further reduce overall transport costs compared to previous studies.

## Community and Environment

AECOM completed an update to the 2015 environmental assessment with a focus on the approval process required for the Project. Further environmental surveys are planned for 2018 as part of that approval process.

A community meeting was held with the Yarnangu people, the traditional owners of the land on which the Project is located, and members of the Ngaanyatjarra Land Council earlier in 2017 and heritage surveys to support field programs have been undertaken throughout the year. Ongoing engagement will continue with the Yarnangu community and other key stakeholders.

## Significant Risk Mitigation

One of the goals of the FSS was to reduce the risk around key technical aspects of the project. A summary of these achievements is as follows:

- Confirmation of metallurgical recoveries at lower grades consistent with planned mining inventory across a more extensive range of ore domains
- Construction of a metallurgical recovery model for better mine optimisation
- More precise geological modelling of weathering boundaries in the resource model
- Identification of substantial water sources within the Project area
- Confirmation of renewable energy generation options to support base-load solar-diesel power
- Identifying the optimal scale of the operation

## Value Enhancement Opportunities

A number of opportunities to enhance economic returns have been identified that were beyond the scope of the current Study. These opportunities will be evaluated during the PFS stage and include, but are not limited to:

- Increasing the mine life through the conversion of Inferred Resource to Indicated Resource within current pre-production capital profile
- Evaluation of wind generated power to be combined with diesel-solar energy systems to reduce power costs
- Metallurgical recovery improvement through alternative flowsheets such as applying magnetic separation to tailings
- Improved mine scheduling and stockpile management
- Potential for high-value exploration discoveries such as One Tree Hill to be brought into development
- The addition of the Succoth deposit, which is not included in Project valuation, provides significant leverage to future copper prices

Figure 5 below shows the district potential and the location of near mine prospects including One Tree Hill and Succoth.

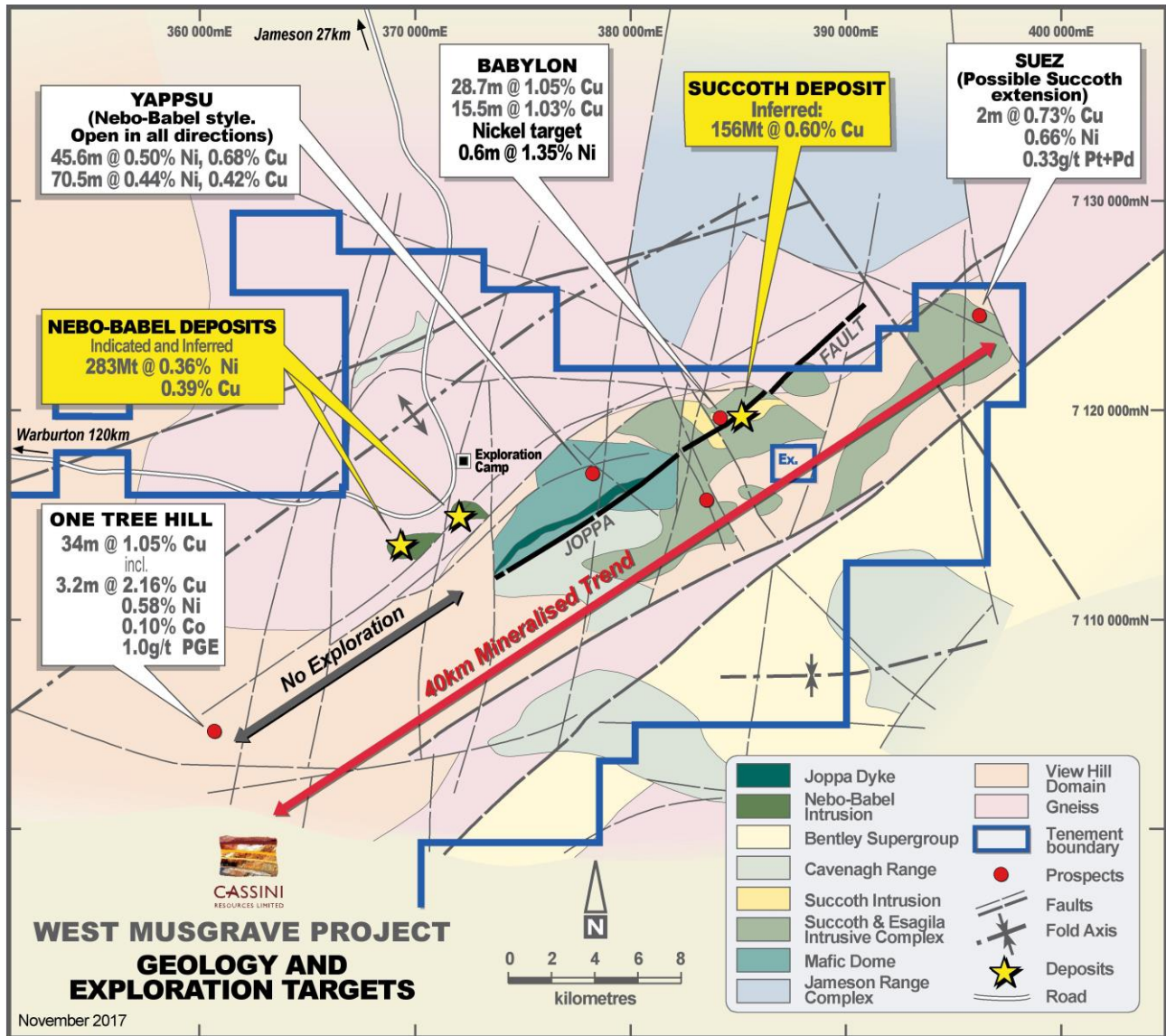


Figure 5: Regional geology and exploration targets

### Permitting

The Nebo-Babel deposits are contained within granted Mining Leases within the West Musgrave Project area. Cassini anticipates that the regulatory approvals process required for the commencement of construction and the subsequent mining approvals will not be likely to delay production as proposed.

### Timeline to Production

This Further Scoping Study estimates that the commencement of production to be July 2022.

This is based on the timeline prescribed under the Earn-in Agreement between OZ Minerals and Cassini for a decision to mine being made around July 2020. Following a positive decision to mine, the estimate assumes an 18-month construction period and a pre-production capital requirement of \$730-800 million.

## Financing

Under the current Earn-in Agreement between OZ Minerals and Cassini Resources, OZ Minerals has the right to earn up to a 70% interest in the West Musgrave Project by funding a minimum expenditure of \$36 million over a maximum period of 3.5 years to complete the study work required to reach a decision to mine. This occurs through 3 milestones, the initial milestone having already been met through the successful completion of the Further Scoping Study. The next milestone of the Earn-in is a contribution of \$19 million to a PFS within an 18-month period to earn a 51% interest in the Project. On successful completion of this, OZ Minerals may elect to progress to the final Joint Venture stage of the agreement where they can earn an additional 19% interest (that is a total of 70%) by contributing a further A\$14 million to complete a Definitive Feasibility Study. Cassini has a free carry interest of 30% up to the completion of the minimum spend requirements (\$36M) and then a loan carry to production cash flow if the amount required to complete a DFS exceeds the minimum spend.

Under the terms of the current agreement, and based on the assumption that OZ Minerals progresses through to a decision to mine, OZ Minerals will be required to fund 70% of the pre-production capital requirement. Cassini will be required to fund 30% of the pre-production capital requirement. Cassini will only be required to meet a maximum of 30% of the total pre-production capital (30% of approximately A\$730M to A\$800M) through the issue of equity or the assumption of debt financing. The requirement for this capital is expected to be at the time of the “decision to mine” in mid-2020. Cassini is confident that as the Project is de-risked through the development studies, the Company’s share price and therefore market capitalisation will increase to be more reflective of the Project value, improving the potential ability for Cassini to raise its share of the development. It is possible that the required funding may only be available on terms that may be dilutive to, or otherwise affect, the value of Cassini’s shares.

Cassini believe there is a reasonable basis to assume that the necessary funding for the Project will be available when required. This is based on, but not limited to, the following:

- The Earn-in arrangement with OZ Minerals. If OZ Minerals continues to progress through the Earn-in, they will be required to fund 70% of the Project capital;
- The economics of the Scoping Study are highly attractive and it is reasonable for Cassini to anticipate that equity financing will be available for a maximum of 30% of the capital required to develop the Project;
- In addition to future equity financing, Cassini may, at the appropriate time, commence discussions with potential debt providers, off-take partners or other strategic investors/ partners to progress all funding options available to the Company. It is expected, given the economics of the project, the stable jurisdiction and presence of a strong partner who is funding 70%, debt or other financing is likely to be available for Cassini’s part of the Project funding;
- The Board & Management have experience of securing equity financing on the ASX; and
- The Company has a history of successful capital raisings and over the last 5 years has completed over A\$20.0 million in equity capital raisings to sophisticated and professional investors, institutional investors and shareholders.

Given the above, the Directors of Cassini have concluded they have a reasonable basis to expect that the Project can be funded to production should the following feasibility studies confirm the Project’s viability.



## Next Steps

Stage 2 of the Earn-in will commence immediately with a focus on addressing remaining technical threats and opportunities for project enhancements. Work programs during this stage will include:

- Further infill drilling of the mineral resource particularly within the estimated payback period
- Advance metallurgical test work with a focus on material from the estimated payback period
- Explore alternative processing flowsheets to identify value-add opportunities
- Confirmation of groundwater resources through further exploration and pump tests
- Commence renewable energy baseline data collection
- Complete further environmental surveys for mine permitting; and
- Undertake consultation with key stakeholder groups

The exploration program will consider numerous regional targets including the One Tree Hill Prospect which was an exciting discovery made in December 2016. Further details of the exploration programs will be released once they are finalised.

Following the announcement of FFS results and commencement of the Stage 2 Earn-in, the JV partners have been preparing scopes of work for activities including resource infill drilling, metallurgy and ground water search. Environmental surveys have been completed and heritage clearances have been received for upcoming field programs which are on track to commence in late March 2018 following an expansion and upgrade of the field camp and services.

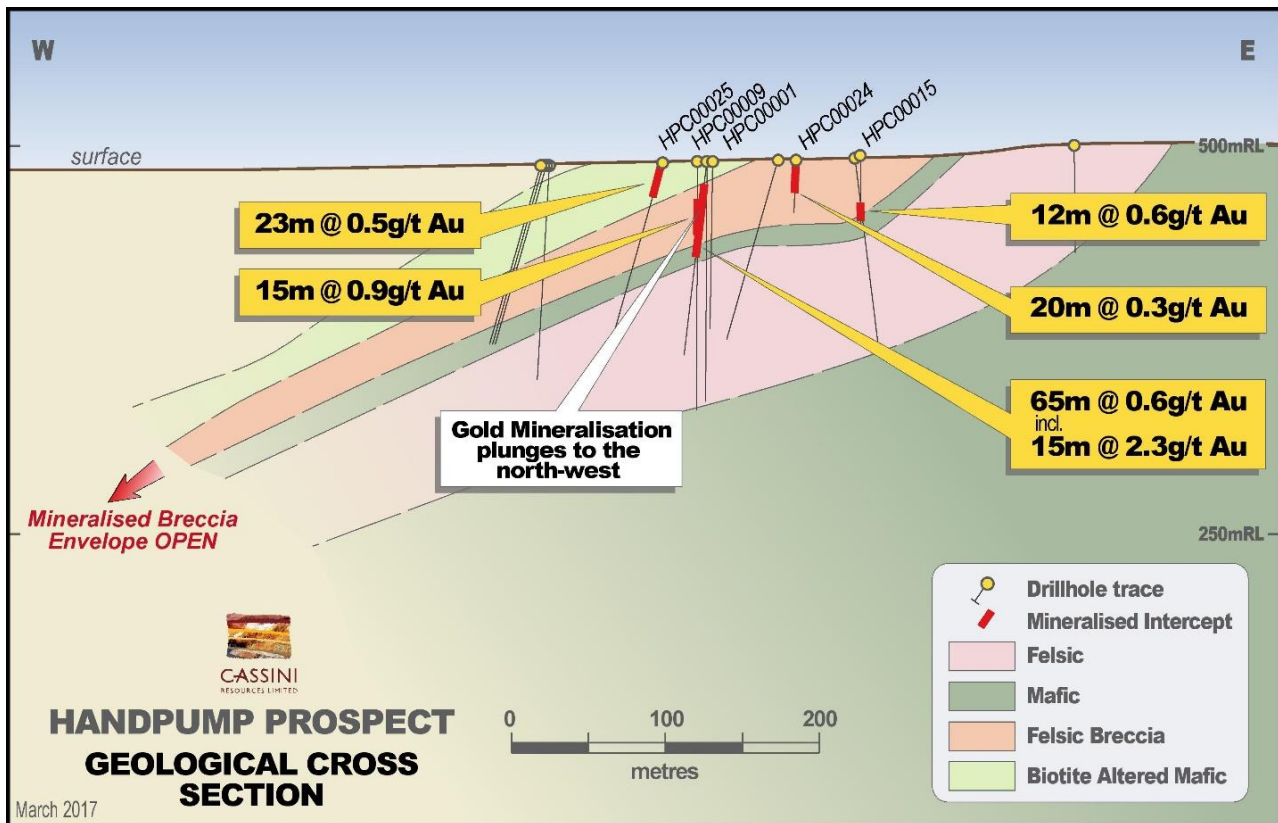
## Mount Squires Gold Project (100% CZI)

During the Quarter, Cassini completed heritage surveys at Mount Squires, clearing priority targets for reconnaissance drilling and regional geochemistry sampling. The Company now has all necessary approvals to commence exploration and is currently finalising programs. An update about work programs will be provided by the end of the next quarter.

## Background

Gold prospectivity was first identified at Mount Squires by Western Mining Corporation (WMC) during geochemical surveying in the late 1990's. The Company's primary target was nickel and copper sulphide which returned poor results although several gold anomalies were identified. Despite this the tenements were later surrendered.

Cassini has been developing the Project over the past 12-18 months through the consolidation of tenements with a number of prospective gold targets, which includes a range of conceptual to advanced prospects. Previous RC by Beadell Resources Ltd in the mid 2000's identified a number of gold prospects with further soil geochemistry, rock chip sampling and mapping. Drilling of these anomalies led to the discovery of significant mineralisation at the Handpump Prospect with significant intercepts of 15m @ 2.3g/t from 31m including 5m @ 4.7g/t from 34m and 12m @ 1.3 g/t including 5m @ 2.0g/t from 25m (Figure 6). Mineralisation is described as flat-lying, hosted in rhyolite breccias and has epithermal style or intrusion-related mineralisation characteristics. Beadell's exploration after the initial discovery was limited due to a change in corporate strategy and the project was later surrendered. Only 26 RC holes have been drilled at this prospect and mineralisation remains open in most directions. Whilst at an early stage of exploration, the thickness and tenor of gold mineralisation demonstrates the economic potential of the Project.



**Figure 6.** Handpump Prospect Oblique Section

### New interpretation provides numerous targets

Recent geological interpretation has benefited from Cassini's growing knowledge base at the adjacent West Musgrave Project through identification of structures controlling mineralisation in the Mount Squires Project. This has highlighted a structural corridor striking over 50km. The previous fractured ownership has prevented the structural corridor from being explored thoroughly.

Handpump is associated with a subtle magnetic anomaly. This signature has been used to identify other magnetic features elsewhere along the structural corridor that may potentially host similar styles of mineralisation.

In addition to the Handpump Prospect, the Mount Squires Project contains a number of recognised gold and pathfinder element geochemical anomalies including the Centrifugal Prospect, 3km south east of Handpump which is part of the interpreted structural trend (Figure 7). Much of the structural corridor is obscured by a veneer of sand cover which has potentially inhibited prospecting and soil geochemistry, particularly in the south-eastern corner of the project area. The Company has also recognised fault intersections and magnetic anomalies in under-explored areas of the project which present prospective exploration targets.



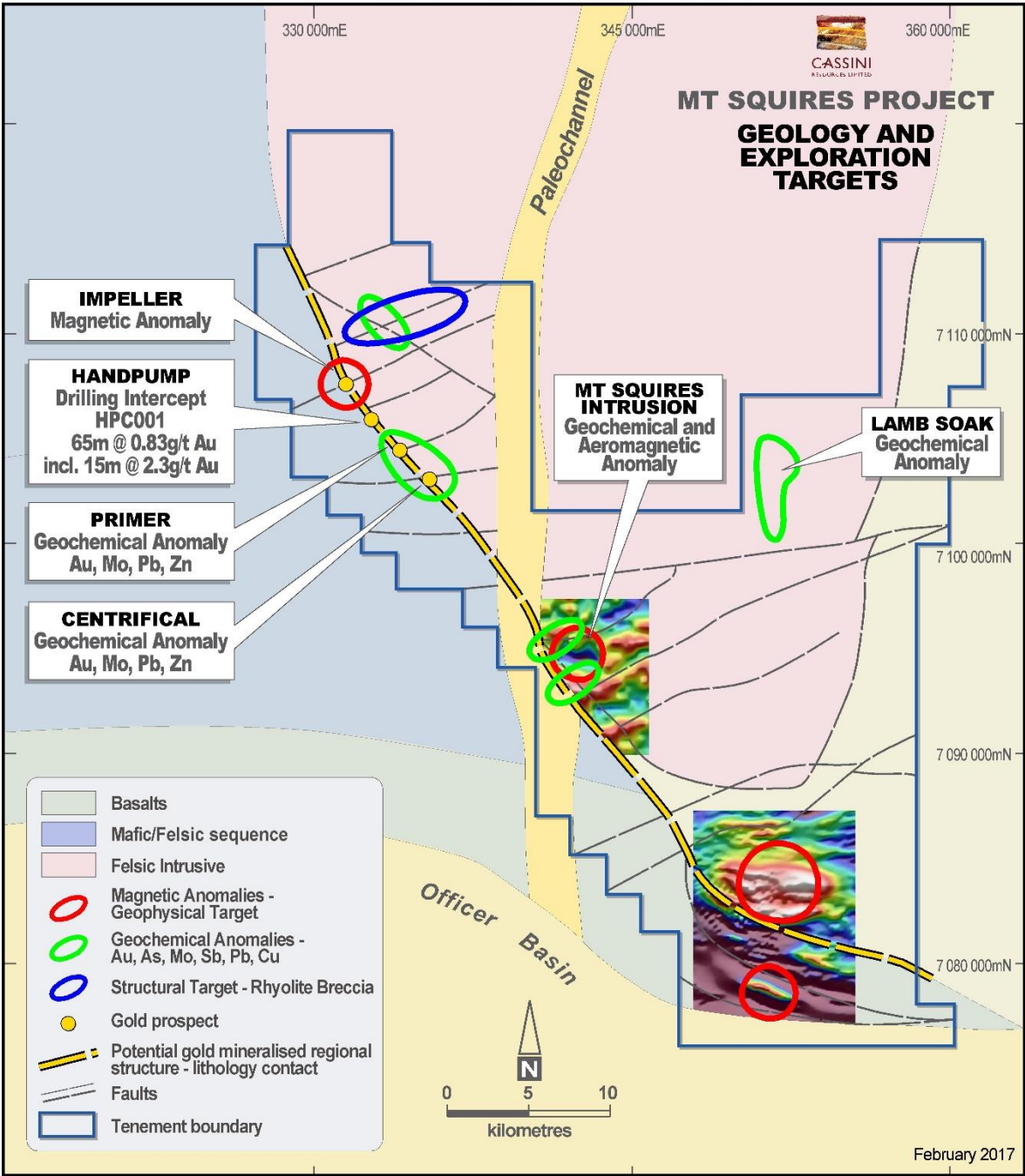
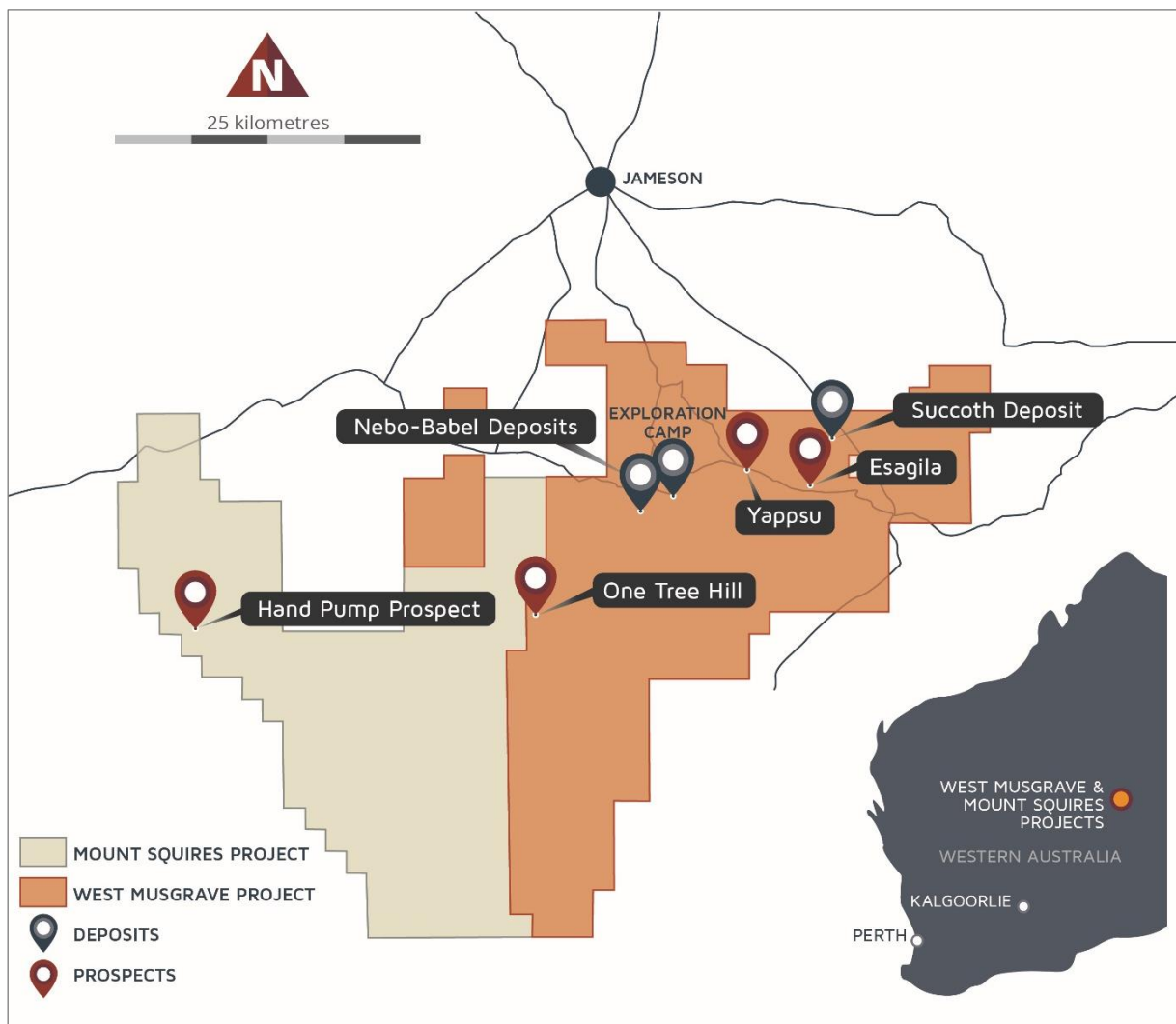


Figure 7. Mount Squires Project geology and exploration targets.

## Next Steps

Cassini has compiled all previous exploration into a consolidated database and utilised public geological and geophysical datasets to assist with geological interpretation and targeting. The Company is finalising work programs involving targeted reverse circulation (RC), reconnaissance RAB drilling and soil geochemistry programs to be undertaken upon receipt of heritage and environmental approvals.

The adjacent West Musgrave Project provides a useful logistics base and the Company has demonstrated expertise in operating in the region (Figure 8). The Mount Squires Project complements the Company's diversified portfolio alongside the flagship West Musgrave nickel and copper assets and the early-stage West Arunta Zinc Project.



**Figure 8.** Mount Squires and West Musgrave Project location.

## West Arunta Project (100% CZI)

The West Arunta Project is a highly prospective base and precious metals target in an underexplored region near Lake McKay in Western Australia. Cassini is targeting large-scale, sedimentary Zn-Pb mineralisation, similar to those deposits found in the Mt Isa region in Queensland.

No field activities were conducted during the Quarter. The Company is currently planning an aerial EM survey over the prospective Dione Horizon and Janus gravity anomaly to assist with mapping the regolith profile as well as potentially directly identify base metal mineralisation. The survey is expected to be conducted on commencement of the field season in 2018.

The Company has won funding through the WA Government Exploration Incentive Scheme to co-fund drilling at the Janus gravity anomaly which the Company believes may represent a dense body of base metal mineralisation, close to the Enceladus Prospect, drilled in 2016 (Figure 9). The Company plans to complete drilling by the end of June 2018.

### Background

Cassini is targeting large-scale, sedimentary Zn-Pb mineralisation, similar to those deposits found in the Mt Isa region in Queensland. A modern-day analogue is the Century Deposit mined by MMG, with a pre-production resource of 167mt @ 8.1% Zn, 1.2% Pb and 33g/t Ag. Century produced a prominent Zn-Pb soil anomaly centred on a siltstone outcrop. Rock chip samples from this outcrop returned only 1-2% Pb & Zn and was later recognised as part of the orebody, but due to strong leaching and a lack of iron oxides, produced a very subtle geochemical and visual expression of the mineralisation.

Recent infill geochemistry sampling has identified several new soil anomalies coincident with the interpreted Dione horizon, the preferential host for sedimentary zinc mineralisation (Figure 10). The Epimetheus Prospect is a large multi-point Pb-Zn-Ag anomaly near the interpreted fold closure of the Dione Horizon, possibly representing anomalism on each limb of the fold and possibly in the fold axis as well. The Hyperion Prospect is primarily a Zn anomaly with a large number of associated path-finder elements. Interestingly, the Hyperion anomaly occurs in favourable regolith just north of the Mimas conceptual target, which is masked by sand cover.

The third new target is a large coherent Cu-Zn anomaly (Phoebe Prospect) has also been identified in basement rocks. This anomaly probably represents a different style of mineralisation but nonetheless warrants further investigation.



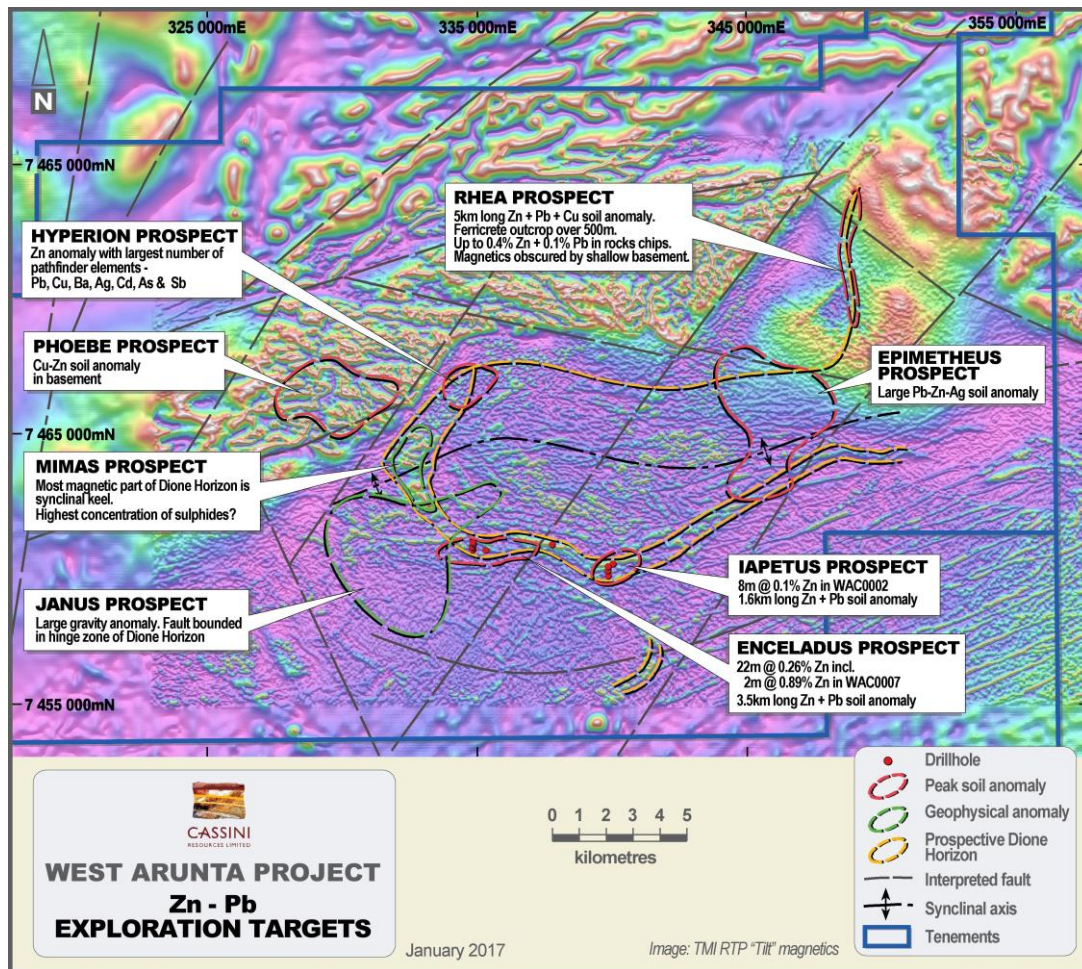
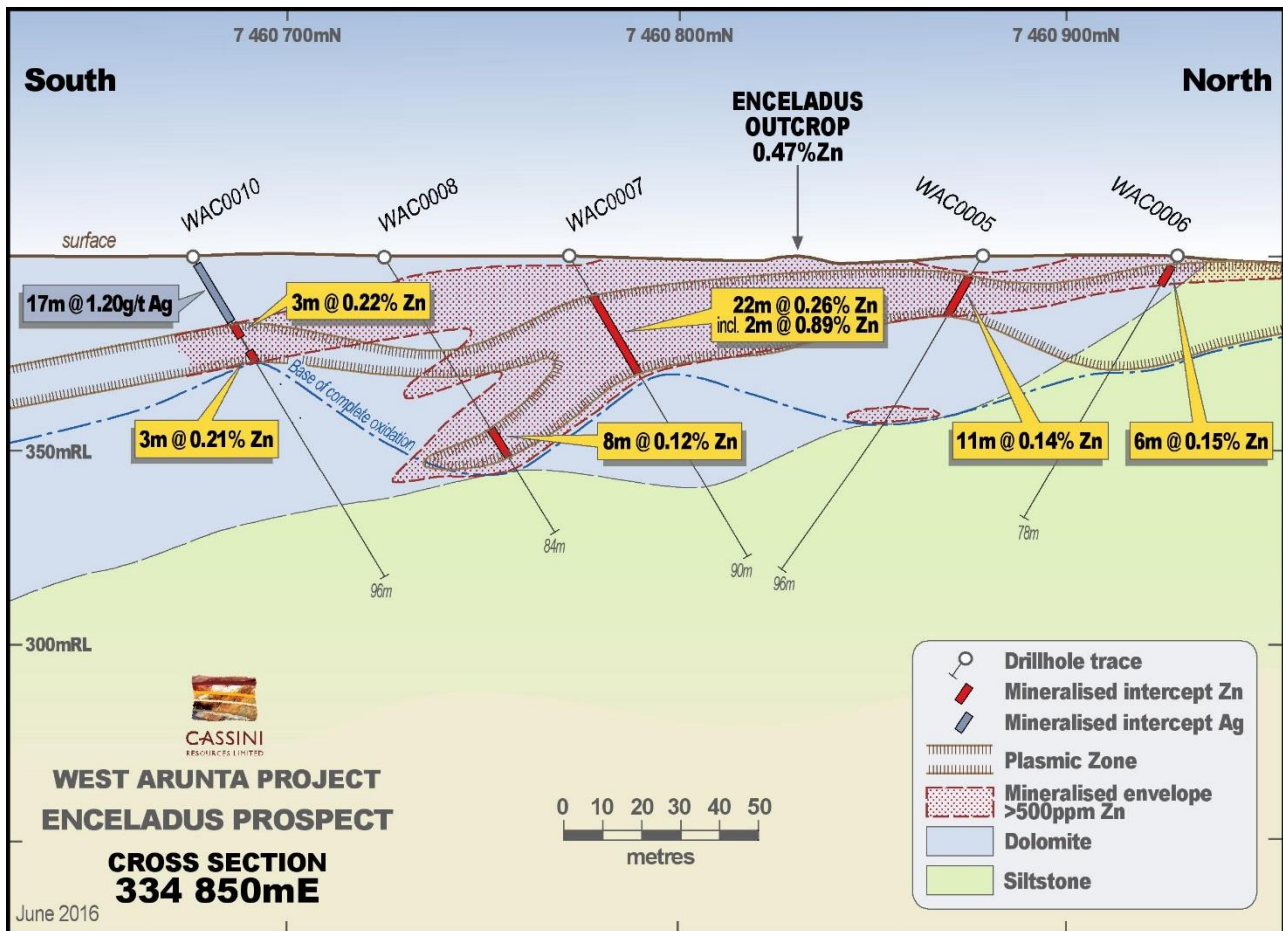


Figure 9. West Arunta Project exploration targets.

RC Drilling during May 2016 returned broad zones of sub-surface enrichment in zinc and associated elements within the weathered zone at both Iapetus and Enceladus Prospects. Best results include 22m @ 0.26% Zn from 13m including 2m @ 0.89% Zn from 22m in WAC0007 at the Enceladus Prospect (Figure 10). Anomalous zones of accessory metals were also intersected such as 21m @ 1.2g/t Ag from 9m in WAC0010. Individual samples of Pb & Cu peaked at 697ppm in WAC0010 and 178ppm in WAC0012 respectively.

All zinc enrichment was intersected in the weathered zone within two main sub-horizontal layers. The zinc-anomalous ferruginous-zones, originally hypothesized as gossans, which were the target of drilling, are reinterpreted to represent hydromorphic ferricretes. These are iron-rich accumulations that have been deposited in the regolith through the lateral movement of groundwater. It is very likely that zinc-rich ferricretes are the result of dispersion plumes from a proximal primary zinc mineralisation source as most ferricretes in the area are not base-metal anomalous.



**Figure 10.** Enceladus cross section.

The quantum of zinc anomalism and the presence of accessory metals such as silver are very encouraging and point to a primary zinc sulphide source nearby.



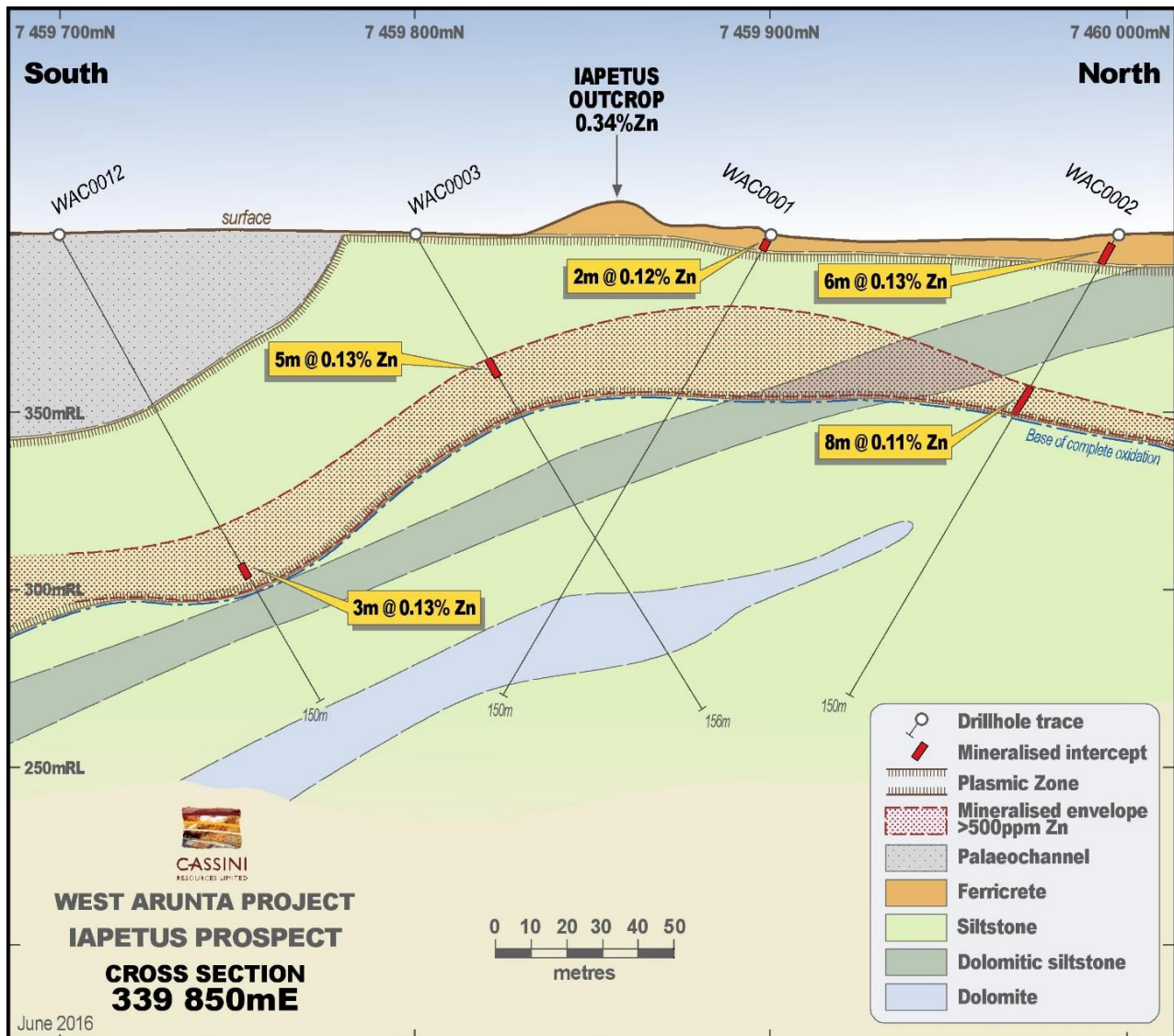


Figure 11. Iapetus cross section.

The geology is dominated by dolomites and siltstones with an apparent gentle southerly dip. The degree of weathering is much stronger and deeper than first interpreted. The regolith profile includes a plasmic zone with complete oxidation of primary minerals to clays and is generally associated with zinc enrichment. The geology is broadly similar at both prospects.

Zinc enrichment occurs as an upper enrichment zone at, or near, the surface as well as a deeper saprolitic enrichment at the base of complete weathering. The upper enrichment zones manifest as ferricretes, originally hypothesised as gossan outcrops. No primary zinc mineralisation was intersected.

The near-surface zinc-enriched ferricretes and the lower zinc enriched zones have been formed by hydromorphic dispersion, that is, zinc has been deposited in the regolith through the lateral movement of ground water and variations in the water table. It is very likely that such zinc-rich ferricretes relate to a nearby primary zinc mineralisation source. Most ferricretes in the area are simply not base-metal anomalous.

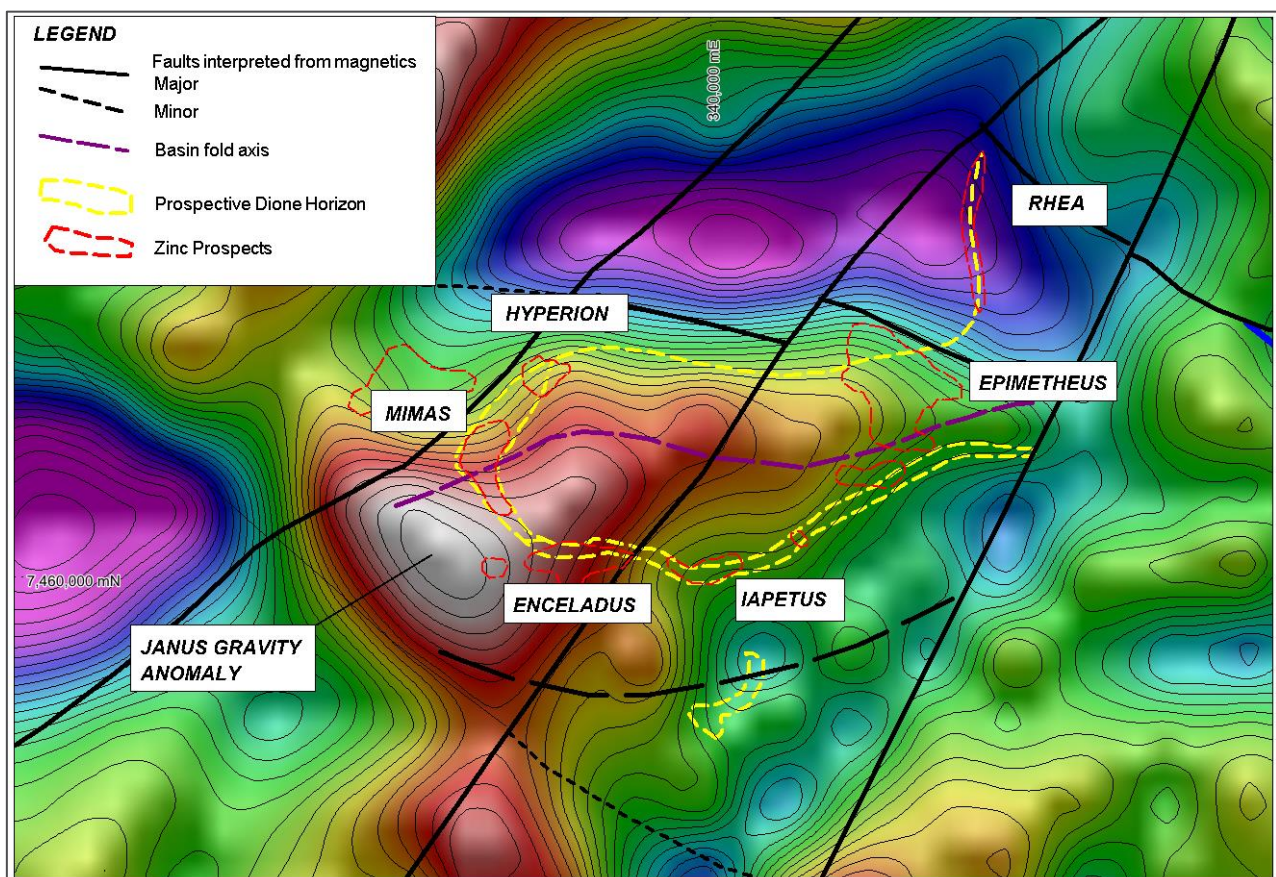


Additional evidence for a nearby primary source at the West Arunta includes the following points:

- Drilling did not intersect any zinc-enriched lithological units in the fresh rock that could plausibly produce zinc-anomalous regolith concentrations through land surface leaching and residual enrichment in the regolith
- Other ferricretes have been found in the project area with no zinc enrichment.

A large residual gravity anomaly to the west of Enceladus (Figures 9 & 12) is now considered the primary exploration target in the project (Janus Prospect). Like the Mimas Prospect, this area is primarily covered by wind-blown sand and is not expected to provide a geochemical signature at surface.

Residual gravity enhances anomalies in a localised area from shallow sources. Gravity is a useful exploration tool in sedimentary zinc provinces due to the contrast between high density sulphide minerals and low density sediments. The main axis of the gravity anomaly correlates very closely with the boundary between the oxidised Heavitree Quartzite unit and the overlying more reduced (target horizon) Bitter Springs formation. This first contact between an oxidised and a reduced sequence is the classic position for sediment-hosted base metal mineralisation.



**Figure 12.** Residual gravity image of West Arunta Project showing zinc prospects.

### Next Steps

The Company is encouraged that the results to date support the geological model which points to a primary source of zinc mineralisation within the project area. Recent soil geochemistry results have provided further evidence of an extensive sedimentary zinc system. Detailed field mapping over these new prospect areas is warranted.

The dispersion plume that has formed the zinc-enriched ferricretes at Iapetus and Enceladus can be tracked to its source, likely to be only up to a few kilometres away. Ground water flow is controlled by the topographic gradient, which can be modelled using modern geophysical techniques. Clay-rich, dispersion plume zones can be mapped by Airborne electromagnetics (AEM).

The Janus Prospect has been elevated up the target priorities due to the geophysical characteristics that may represent sedimentary sulphides. Infilling the regional gravity survey over the anomaly, combined with AEM, will assist with deeper drill targeting. These programs are now most likely to occur in the second half of 2017.

For further information please contact

**Richard Bevan**

### About Cassini

Cassini Resources Limited (ASX: CZI) is a base and precious metals developer and explorer based in Perth. In April 2014, Cassini acquired its flagship West Musgrave Project (WMP), located in Western Australia. The Project is a world-class asset which currently has over 1.0 million tonnes of contained nickel and 2.0 million tonnes of contained copper in Resource. The Project is a new mining camp with three existing nickel and copper sulphide deposits and a number of other significant regional exploration targets already identified. The WMP is the largest undeveloped nickel - copper project in Australia.

In August 2016, Cassini entered into a three-stage \$36M Farm-in/Joint Venture Agreement with prominent Australian mining company OZ Minerals Ltd (ASX: OZL). The Joint Venture provides a clear pathway to a decision to mine and potential cash flow for Cassini.

Cassini is also progressing its Mt Squires Gold Project and an early stage zinc exploration project in the West Arunta region both located in Western Australia.

### Competent Persons Statement

The information in this report that relates to Exploration Results is based on information compiled or reviewed by Mr Greg Miles, who is an employee of the company. Mr Miles is a Member of the Australian Institute of Geoscientists and has sufficient experience of relevance to the styles of mineralisation and the types of deposits under consideration, and to the activities undertaken, to qualify as a Competent Person as defined in the 2012 Edition of the Joint Ore Reserves Committee (JORC) Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Mr Miles consents to the inclusion in this report of the matters based on information in the form and context in which it appears.

The information in this report which relates to the Nebo-Babel Mineral Resource estimation and classification has been prepared by Mr Andrew Weeks who is a full-time employee of Golder Associates Pty Ltd and a Fellow of the Australasian Institute of Mining and Metallurgy. Mr Weeks has sufficient relevant experience to the style of mineralisation and type of deposit under consideration and to the activity for which he is undertaking to qualify as a Competent Person as defined in the JORC Code, 2012 Edition. Both Mr Miles and Mr Weeks consent to the inclusion in this report of the matters based on information in the form and context in which it appears.

The Company is not aware of any new information or data, other than that disclosed in this report, that materially affects the information included in this report and that all material assumptions and parameters underpinning Mineral Resource Estimates as reported in the market announcement dated 25 February 2015 (Nebo & Babel Deposits) and 7 December 2015 (Succoth Deposit) continue to apply and have not materially changed.

Additional information regarding exploration results can be found in ASX releases of 30 May 2016, 23 June 2016, 1 May 2017, 8 June 2017, 14 June 2017 and 19 July 2017.

## APPENDIX 1 – TENEMENT SUMMARY – 31 December 2017

1. MINING TENEMENTS HELD				
Tenement Reference	Location	Nature of interest	Interest at beginning of quarter	Interest at end of quarter
<b>West Musgrave*</b>				
E69/3163	WA	Granted	100%	100%
E69/3169	WA	Granted	100%	100%
E69/3164	WA	Granted	100%	100%
E69/3165	WA	Granted	100%	100%
E69/3168	WA	Granted	100%	100%
E69/1505	WA	Granted	100%	100%
E69/1530	WA	Granted	100%	100%
E69/2201	WA	Granted	100%	100%
E69/2313	WA	Granted	100%	100%
M69/72	WA	Granted	100%	100%
M69/73	WA	Granted	100%	100%
M69/74	WA	Granted	100%	100%
M69/75	WA	Granted	100%	100%
E69/3412	WA	Granted	100%	100%
L69/0024	WA	Granted	100%	100%
L69/0025	WA	Granted	100%	100%
<b>Mt Squires</b>				
E69/3424	WA	Granted	100%	100%
E69/3425	WA	Granted	100%	100%
<b>Crossbow (West Arunta/X17)</b>				
E80/4749	WA	Granted	100%	100%
E80/4796	WA	Granted	100%	100%
E80/4813	WA	Granted	100%	100%

\*Note West Musgrave Project (WMP) tenements subject to agreement whereby OZ Minerals has the right to farm-in to Cassini's wholly owned WMP via a three stage process. Refer ASX announcement 13 October 2016.

## 2. MINING TENEMENTS ACQUIRED/DISPOSED

Tenement Reference	Location	Nature of interest	Interest at beginning of quarter	Interest at end of quarter
<u>Acquired</u> Nil				
<u>Disposed</u>				

## 3. BENEFICIAL PERCENTAGE INTERESTS HELD IN FARM-IN OR FARM-OUT AGREEMENTS

Tenement Reference	Location	Nature of interest	Interest at beginning of quarter	Interest at end of quarter
Nil				

## 4. BENEFICIAL PERCENTAGE INTERESTS HELD IN FARM-IN OR FARM-OUT AGREEMENTS ACQUIRED OR DISPOSED

Tenement Reference	Location	Nature of interest	Interest at beginning of quarter	Interest at end of quarter
<u>Acquired</u> Nil				
<u>Disposed</u> Nil				

## Appendix 5B

# Mining exploration entity and oil and gas exploration entity quarterly report

Introduced 01/07/96 Origin Appendix 8 Amended 01/07/97, 01/07/98, 30/09/01, 01/06/10, 17/12/10, 01/05/13, 01/09/16

### Name of entity

Cassini Resources Limited

### ABN

50 149 789 337

### Quarter ended ("current quarter")

31 December 2017

Consolidated statement of cash flows	Current quarter \$A'000	Year to date (6 months) \$A'000
<b>1. Cash flows from operating activities</b>		
1.1 Receipts from customers		
1.2 Payments for		
(a) exploration & evaluation	(160)	(831)
(b) development	-	-
(c) production	-	-
(d) staff costs	(351)	(561)
(e) administration and corporate costs	(287)	(510)
1.3 Dividends received (see note 3)	-	-
1.4 Interest received	2	11
1.5 Interest and other costs of finance paid	-	-
1.6 Income taxes paid	-	-
1.7 Research and development refunds	-	-
1.8 Other (joint venture receipts & net GST)	2,015	2,321
<b>1.9 Net cash from / (used in) operating activities</b>	<b>1,218</b>	<b>430</b>

<b>2. Cash flows from investing activities</b>		
2.1 Payments to acquire:		
(a) property, plant and equipment	-	-
(b) tenements (see item 10)	-	-
(c) investments	-	-
(d) other non-current assets	-	-

<b>Consolidated statement of cash flows</b>		<b>Current quarter \$A'000</b>	<b>Year to date (6 months) \$A'000</b>
2.2	Proceeds from the disposal of:		
	(a) property, plant and equipment	-	-
	(b) tenements (see item 10)	-	-
	(c) investments	-	-
	(d) other non-current assets	-	-
2.3	Cash flows from loans to other entities	-	-
2.4	Dividends received (see note 3)	-	-
2.5	Other (provide details if material)	-	-
<b>2.6</b>	<b>Net cash from / (used in) investing activities</b>	<b>-</b>	<b>-</b>

<b>3.</b>	<b>Cash flows from financing activities</b>		
3.1	Proceeds from issues of shares	-	-
3.2	Proceeds from issue of convertible notes	-	-
3.3	Proceeds from exercise of share options	-	-
3.4	Transaction costs related to issues of shares, convertible notes or options	-	-
3.5	Proceeds from borrowings	-	-
3.6	Repayment of borrowings		
3.7	Transaction costs related to loans and borrowings	-	-
3.8	Dividends paid	-	-
3.9	Other (provide details if material)	-	-
<b>3.10</b>	<b>Net cash from / (used in) financing activities</b>	<b>-</b>	<b>-</b>

<b>4.</b>	<b>Net increase / (decrease) in cash and cash equivalents for the period</b>		
4.1	Cash and cash equivalents at beginning of period	1,303	2,091
4.2	Net cash from / (used in) operating activities (item 1.9 above)	1,218	430
4.3	Net cash from / (used in) investing activities (item 2.6 above)	-	-
4.4	Net cash from / (used in) financing activities (item 3.10 above)	-	-
4.5	Effect of movement in exchange rates on cash held	-	-
<b>4.6</b>	<b>Cash and cash equivalents at end of period</b>	<b>2,521</b>	<b>2,521</b>



<b>5. Reconciliation of cash and cash equivalents</b> at the end of the quarter (as shown in the consolidated statement of cash flows) to the related items in the accounts	<b>Current quarter \$A'000</b>	<b>Previous quarter \$A'000</b>
5.1 Bank balances	2,117	720
5.2 Call deposits	79	79
5.3 Bank overdrafts	-	-
5.4 Other (JV funds held)	325	504
<b>5.5 Cash and cash equivalents at end of quarter (should equal item 4.6 above)</b>	<b>2,521</b>	<b>1,303</b>

**6. Payments to directors of the entity and their associates**

- 6.1 Aggregate amount of payments to these parties included in item 1.2
- 6.2 Aggregate amount of cash flow from loans to these parties included in item 2.3
- 6.3 Include below any explanation necessary to understand the transactions included in items 6.1 and 6.2

**Current quarter  
\$A'000**

274

-

Executive and non-executive Director fees, including geological consulting to a company associated with Dr Hronsky.

**7. Payments to related entities of the entity and their associates**

- 7.1 Aggregate amount of payments to these parties included in item 1.2
- 7.2 Aggregate amount of cash flow from loans to these parties included in item 2.3
- 7.3 Include below any explanation necessary to understand the transactions included in items 7.1 and 7.2

**Current quarter  
\$A'000**

50

-

Company secretarial & financial management consulting services to a company associated with Mr Warren.

8. <b>Financing facilities available</b> <i>Add notes as necessary for an understanding of the position</i>	<b>Total facility amount at quarter end \$A'000</b>	<b>Amount drawn at quarter end \$A'000</b>
8.1 Loan facilities	-	-
8.2 Credit standby arrangements	-	-
8.3 Other (please specify)	-	-
8.4 Include below a description of each facility above, including the lender, interest rate and whether it is secured or unsecured. If any additional facilities have been entered into or are proposed to be entered into after quarter end, include details of those facilities as well.		
N/A		

9. <b>Estimated cash outflows for next quarter</b>	<b>\$A'000</b>
9.1 Exploration and evaluation	(300)
9.2 Development	-
9.3 Production	-
9.4 Staff costs	(150)
9.5 Administration and corporate costs	(150)
9.6 Other	-
<b>9.7 Total estimated cash outflows</b>	<b>(600)</b>

10. <b>Changes in tenements (items 2.1(b) and 2.2(b) above)</b>	<b>Tenement reference and location</b>	<b>Nature of interest</b>	<b>Interest at beginning of quarter</b>	<b>Interest at end of quarter</b>
10.1 Interests in mining tenements and petroleum tenements lapsed, relinquished or reduced	-	-	-	-
10.2 Interests in mining tenements and petroleum tenements acquired or increased	-	-	-	-

### **Compliance statement**

- 1 This statement has been prepared in accordance with accounting standards and policies which comply with Listing Rule 19.11A.
- 2 This statement gives a true and fair view of the matters disclosed.

*[lodged electronically without signature]*

25 January 2018

Sign here: .....

Date: .....

(~~Director~~/Company secretary)

Steven Wood

Print name: .....

### **Notes**

1. The quarterly report provides a basis for informing the market how the entity's activities have been financed for the past quarter and the effect on its cash position. An entity that wishes to disclose additional information is encouraged to do so, in a note or notes included in or attached to this report.
2. If this quarterly report has been prepared in accordance with Australian Accounting Standards, the definitions in, and provisions of, AASB 6: Exploration for and Evaluation of Mineral Resources and AASB 107: Statement of Cash Flows apply to this report. If this quarterly report has been prepared in accordance with other accounting standards agreed by ASX pursuant to Listing Rule 19.11A, the corresponding equivalent standards apply to this report.
3. Dividends received may be classified either as cash flows from operating activities or cash flows from investing activities, depending on the accounting policy of the entity.